

**WHAT IS CLAIMED IS:**

1. A cut-to-length heating system, comprising:
  - a heating cable including a first conductor having a first resistivity and a second conductor having a second resistivity, said heating cable having a first end and a second end, said first resistivity substantially higher than said second resistivity; and
- 5 an average power limiting device electrically connecting said first conductor and said second conductor at said second end.
2. The system of claim 1, wherein said first conductor is electrically connected to said second conductor at said first end.
3. The system of claim 1, wherein said average power limiting device supplies an average predetermined current to one of said first conductor and said second conductor.
4. The system of claim 1, wherein said heating cable is substantially surrounded by one of concrete and asphalt.
5. The system of claim 1, further comprising a temperature sensor one of intimately connected to said cable and embedded in said cable.
6. The system of claim 5, wherein said temperature sensor provides information to said average power limiting device, said power limiting device utilizing said information to turn off power to said heating cable if said information corresponds to a predetermined temperature.

7. The system of claim 1, wherein said first resistivity is over 10 times the resistivity of said second resistivity.

8. The system of claim 1, further comprising insulation substantially surrounding said second conductor, said first conductor substantially surrounding said insulation.

9. The system of claim 1, wherein said average power limiting device, limits electrical current entering said heater cable to a predetermined value.

10. The system of claim 1, further comprising a cable length setting device that provides information analogous to a length of said heater cable to said power limiting device, said power limiting device providing power to said heater cable dependent upon said information.

11. A tri-axial heating cable, comprising:

- a center conductor having a conductivity characteristic;
- an insulating layer substantially surrounding said center conductor;
- a resistive conductor layer substantially surrounding said insulating layer, said resistive conductor layer having a resistance at least ten times the reciprocal of said conductivity;
- an electrical insulating layer substantially surrounding said resistive conductor layer; and
- a conductive layer substantially surrounding said electrical insulating layer.

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12. The cable of claim 11, wherein said resistive conductor layer is one of a mesh and a helically wound resistive conductor.

13. The cable of claim 11, wherein said center conductor and said resistive conductor are connected together proximate an end of said cable.

14. A method of controlling energy delivered to a heating system, comprising the steps of:

providing at least one heating cable;

selecting a predetermined heat density for said at least one heating cable;

5 determining a resistance value of at least one said heating cable; and

delivering electrical current to said heating cable dependent on said resistance value and said predetermined heat density.

15. The method of claim 14, further comprising the steps of:

cutting said heating cable to a length, thereby forming a new end; and

electrically connecting together at least two conductors at said new end.

16. The method of claim 14, further comprising the step of installing said heating cable proximate to one of a roof gutter and a roof.

17. The method of claim 14, further comprising the step of installing said heating cable embedded in one of concrete and pavement.

18. The method of claim 14, wherein said delivering electrical current step includes limiting an average current supplied to said heating cable to a predetermined value.